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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

YUEN, KAN

ART UNIT

PAPER NUMBER

2616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/633,459	AWEYA ET AL.	
	Examiner	Art Unit	
	Kan Yuen	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/426,763.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/01/2003</u> | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Claim Objections

1. Claims 3, 4, 6-8 are objected to because of the following informalities:

In claim 3, line 1, the term "a stable integral controller gain k", seems to refer to the same term in claim 1, line 2. If this is true, it is suggested to change the term "a stable integral control gain k", to "the stable integral controller gain k".

In claim 4, lines 1-2, the terms "a range" and "a stable gain" seems to refer to the same term in claim 3, lines 2, and 3. If this is true, it is suggested to change the term "a range" and "a stable gain" to "the range" and "the stable gain".

In claim 6, lines 2, and 6, the term "a packet mark/drop routine", seems to refer to the same term in claim 1, line 19. If this is true, it is suggested to change the term "a packet mark/drop routine", to "the packet mark/drop routine". Similar problem exist in claim 7, lines 2 and 6, in claim 8, line 1.

Claims 6 and 7 are identically the same, therefore it is suggested to remove any one of the claims.

Claims 14 and 15 are identically the same, therefore it is suggested to remove any one of the claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is considered as vague and indefinite because some of the variable are not defined, such as (x, n, and controller gain K_i). Similar problem exist in claims 9, 17, and 18.

Claim 13, line 1, the term "the data arrival rate measurer" has no antecedent basis.

Claims 2-8, and 10-16 are rejected because they are depending on claims 1 and 9.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 17 and 18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Signals do not fall into any of the four statutory categories of invention. They do not set forth steps or a procedure and therefore cannot be a process. A signal is not a machine because it has no physical

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structure and cannot itself perform a useful, concrete, and tangible result. A signal is made up of energy, not matter, and therefore is not a composition of matter. Lastly, a manufacture requires physical substance, which a signal does not have. For claims 17 and 18 it is suggested that the claims should be written in terms of "computer" readable medium, stored with, embodied with or encoded with a "computer" program or computer executable instructions

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1 and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending

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Application No. 10/426289. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

For claims 1 and 9, claim 1 of copending Application No. 10/426289 disclosed the method of

1. A method for controlling a data flow in a data network, the method comprising:

selecting a stable integral controller gain k_i for said data network;

measuring a data arrival rate $R(n)$ at time n ;

calculating a normalized error signal $e(n)$, according to the relation

$$e(n) = (T(n) - R(n))/x,$$

where $T(n)$ is an assigned capacity at time n , and x is a nominal packet size;

computing a mark/drop probability $p(n)$ according to the relation

$$p(n) = \min \{ \max [p(n-1) + k_i \cdot \Delta t \cdot e(n), 0] , p_{\max} \}$$

where Δt is the time interval between a $(n-1)^{th}$ and the n^{th} computation, and 0

$< p_{\max} \leq 1$; and

executing a packet mark/drop routine based upon the calculated mark/drop

probability $p(n)$.

Applicant's claims 1 and 9 merely narrowed down the scope of the claim 1 of copending Application No. 10/426289 by specifying the $R(n)$ is sum of the data arrival rates for a particular precedence grade under consideration plus the data arrival rates of all precedence grades with a higher priority than the particular precedent grade. In this case, the applicant's $R(n)$ is defined as the sum of all the precedence grade rates comparing with the copending application's $R(n)$ is one precedence grade rate. An official notice is taken that summing one or more grade rates can be done in similar manner, however its not considered as a new invention. Thus, it would have been

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obvious to the person of ordinary skilled in the art at the time of the invention to defined the $R(n)$ limit by summing all the incoming precedence grade rates. The motivation for summing all the grade rates is to compare the rates and select the best rate, so that the grade rate can be reserved in higher priority for transmission.

Claim 3 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 2 of copending Application No. 10/426289.

This is a provisional obviousness-type double patenting rejection.

For claim 3, claim 2 of copending Application No. 10/426289 disclosed the method of:

2. The method of claim 1 wherein the step of selecting a stable integral controller gain k_i for said data network is preceded by the step of:
pre-calculating a range within which all gains k_i result in a stable gain.

Claim 4 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 3 of copending Application No. 10/426289.

This is a provisional obviousness-type double patenting rejection.

For claim 4, claim 3 of copending Application No. 10/426289 disclosed the method of:

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3. The method of claim 2 wherein the step of pre-calculating a range within which all gains k_i result in a stable gain for said data network, is determined according to the method of:

obtaining for said network a value for said network a set of parameters k , d_0 , and

τ ,

where k is a steady-state gain of said network,

d_0 is a time delay of said network, and

τ is a time constant of said network;

determining a z_1 in the interval $\left(0, \frac{\pi}{2}\right)$ satisfying

$$\cot(z_1) = \frac{\tau}{d_0} z_1 \quad ; \text{ and}$$

computing a range of stable gains k_i for said data network according to

$$-\frac{\tau}{kd_0^2} z_1 \sqrt{z_1^2 + \frac{d_0^2}{\tau^2}} < k_i < 0 \quad .$$

Claim 5 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 4 of copending Application No. 10/426289.

This is a provisional obviousness-type double patenting rejection.

For claim 5, claim 4 of copending Application No. 10/426289 disclosed the method of:

4. The method of claim 1 wherein the step of measuring a data arrival rate $R(n)$ at time n further comprises:

filtering the data arrival rate $R(n)$ according to the relation:

$$R'(n) = (1 - \beta) \cdot R'(n-1) + \beta \cdot R(n)$$

where β is a filter gain parameter such that $0 < \beta < 1$,

$R'(n-1)$ is the filtered data arrival rate at time $n-1$, and

$R'(n)$ is the desired filtered data arrival rate at time n .

Claims 6-7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 5 of copending Application No. 10/426289. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

For claims 6-7, claim 5 of copending Application No. 10/426289 disclosed the method of:

5. The method of claim 1 further comprising a step, preceding the step of executing a packet mark/drop routine, of:

testing the data arrival rate $R(n)$ against a rate threshold T_L ; and

if the data arrival rate $R(n)$ is below or equal to the rate threshold T_L then

bypassing the step of executing a packet mark/drop routine.

Applicant's claims 6-7 are merely narrow down the scope of the claim 5 of application no. 10/426289 by specifying testing the cumulative data arrival rate $R(n)$. In this case, testing one or more data arrival rate is not considered as a new invention, because testing one data arrival rate is similar to testing multiple rates. Thus, it would

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have been obvious to the person of ordinary skilled in the art at the time of the invention to testing multiple data rate. The motivation for using the testing multiple data rate being that it improves system parameters such as delay or bandwidth usage.

Claim 8 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 6 of copending Application No. 10/426289.

This is a provisional obviousness-type double patenting rejection.

For claim 8, claim 6 of copending Application No. 10/426289 disclosed the method of:

6. The method of claim 1 wherein the step of executing a packet mark/drop routine

further comprises:



marking/dropping packets according to a random number generator mark/drop scheme.

Claim 11 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 6 of copending Application No. 10/426289.

This is a provisional obviousness-type double patenting rejection.

For claim 11, claim 9 of copending Application No. 10/426289 disclosed the method of:

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9. The apparatus of claim 8 wherein the integral controller gain k_i setting for which the said network is stable is chosen from a pre-calculated range within which all gains k_i are gains for which said network is stable.

Claim 12 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 10 of copending Application No. 10/426289.

This is a provisional obviousness-type double patenting rejection.

For claim 12, claim 10 of copending Application No. 10/426289 disclosed the method of:

10. The apparatus of claim 9 wherein the pre-calculated range within which all gains k_i are gains for which said network is stable, is determined according to the method of:
- obtaining for said network a value for said network of a set of parameters k , d_0 , and τ ,
- where k is a steady-state gain of said network,
- d_0 is a time delay of said network, and
- τ is a time constant of said network;

determining a z_1 in the interval $\left(0, \frac{\pi}{2}\right)$ satisfying

$$\cot(z_1) = \frac{\tau}{d_0} z_1 \quad ; \text{ and}$$

computing a range of stable gains k_i for said data network according to

$$-\frac{\tau}{kd_0^2} z_1 \sqrt{z_1^2 + \frac{d_0^2}{\tau^2}} < k_i < 0 \quad .$$

Claim 13 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 11 of copending Application No. 10/426289.

This is a provisional obviousness-type double patenting rejection.

For claim 13, claim 11 of copending Application No. 10/426289 disclosed the method of:

11. The apparatus of claim 8 wherein the data arrival rate measurer for measuring data arrival rate $R(n)$ at time n further comprises:

a filter for filtering the data arrival rate $R(n)$ according to the relation:

$$R'(n) = (1 - \beta) \cdot R'(n-1) + \beta \cdot R(n)$$

where β is a filter gain parameter such that $0 < \beta < 1$,

$R'(n-1)$ is the filtered data arrival rate at time $n-1$, and

$R'(n)$ is the desired filtered data arrival rate at time n .

Claims 14-15 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 12 of copending Application No. 10/426289. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

For claims 14-15, claim 12 of copending Application No. 10/426289 disclosed the method of:

12. The apparatus of claim 8 further comprising:

a test module for testing the data arrival rate $R(n)$ against a rate threshold T_L ; and
if the data arrival rate $R(n)$ is below or equal to the rate threshold T_L then
bypassing the packet mark/drop module.

Applicant's claims 14-15 are merely narrow down the scope of the claim 12 of application no. 10/426289 by specifying testing the cumulative data arrival rate $R(n)$. In this case, testing one or more data arrival rate is not considered as a new invention, because testing one data arrival rate is similar to testing multiple rates. Thus, it would have been obvious to the person of ordinary skilled in the art at the time of the invention to testing multiple data rate. The motivation for using the testing multiple data rate being that it improves system parameters such as delay or bandwidth usage.

Claim 16 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 13 of copending Application No. 10/426289.

This is a provisional obviousness-type double patenting rejection.

For claim 16, claim 13 of copending Application No. 10/426289 disclosed the method of:

13. The apparatus of claim 8 wherein the packet mark/drop module further comprises:
a random number generator drop scheme module.

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Claim 17 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 15 of copending Application No. 10/426289. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

For claim 17, claim 15 of copending Application No. 10/426289 disclosed the method of

15. An article of manufacture for controlling a data flow in a data network, the article of manufacture comprising:

at least one processor readable carrier, and instructions carried on the at least one carrier; wherein the instructions are configured to be readable from the at



least one carrier by at least one processor and thereby cause the at least one processor to operate so as to:

select a stable gain of an integral controller gain k_i for said data network;

measure a data arrival rate $R(n)$ at time n ;

calculate a normalized error signal $e(n)$, according to the relation

$$e(n) = (T(n) - R(n))/x,$$

where $T(n)$ is an assigned capacity at time n , and x is a nominal packet size;

compute a mark/drop probability $p(n)$ according to the relation

$$p(n) = \min \{ \max [p(n-1) + k_i \cdot \Delta t \cdot e(n), 0], p_{\max} \}$$

where Δt is the time interval between a $(n-1)^{\text{th}}$ and the n^{th} computation, and 0

$< p_{\max} \leq 1$; and

execute a packet mark/drop routine based upon the calculated mark/drop probability $p(n)$.

Applicant's claim 17 merely narrowed down the scope of the claim 15 of copending Application No. 10/426289 by specifying the $R(n)$ is sum of the data arrival rates for a particular precedence grade under consideration plus the data arrival rates of all precedence grades with a higher priority than the particular precedent grade. In this case, the applicant's $R(n)$ is defined as the sum of all the precedence grade rates comparing with the copending application's $R(n)$ is one precedence grade rate. An official notice is taken that summing one or more grade rates can be done in similar manner, however its not considered as a new invention. Thus, it would have been obvious to the person of ordinary skilled in the art at the time of the invention to defined the $R(n)$ limit by summing all the incoming precedence grade rates. The motivation for summing all the grade rates is to compare the rates and select the best rate, so that the grade rate can be reserved in higher priority for transmission.

Claim 18 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 16 of copending Application No. 10/426289. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

For claim 18, claim 16 of copending Application No. 10/426289 disclosed the method of

16. A signal embodied in a carrier wave and representing sequences of instructions which, when executed by at least one processor, cause the at least one processor to control a data flow by performing the steps of:
- selecting a stable gain combination of an integral controller gain k_i ;
 - measuring a data arrival rate $R(n)$ at time n ;
 - calculating a normalized error signal $e(n)$, according to the relation
$$e(n) = (T(n) - R(n))/x,$$
where $T(n)$ is an assigned capacity at time n ;
 - computing a mark/drop probability $p(n)$ according to the relation
$$p(n) = \min \{ \max [p(n-1) + k_i \cdot \Delta t \cdot e(n), 0] , p_{\max} \}$$
where Δt is the time interval between a $(n-1)^{\text{th}}$ and the n^{th} computation, and $0 < p_{\max} \leq 1$; and
 - executing a packet mark/drop routine based upon the calculated mark/drop probability $p(n)$.

Applicant's claim 18 merely narrowed down the scope of the claim 16 of copending Application No. 10/426289 by specifying the $R(n)$ is sum of the data arrival rates for a particular precedence grade under consideration plus the data arrival rates of all precedence grades with a higher priority than the particular precedent grade. In this case, the applicant's $R(n)$ is defined as the sum of all the precedence grade rates comparing with the copending application's $R(n)$ is one precedence grade rate. An official notice is taken that summing one or more grade rates can be done in similar manner, however its not considered as a new invention. Thus, it would have been obvious to the person of ordinary skilled in the art at the time of the invention to defined

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the R(n) limit by summing all the incoming precedence grade rates. The motivation for summing all the grade rates is to compare the rates and select the best rate, so that the grade rate can be reserved in higher priority for transmission.

Allowable Subject Matter

5. Claims 2 and 10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The prior art fails to teach the method of the number of precedence grades is three.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Aweya et al. (Application No.: 10/426286), and Aweya et al. (Application No.: 10/426763) are show systems which considered pertinent to the claimed invention.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kan Yuen whose telephone number is 571-270-2413. The examiner can normally be reached on Monday-Friday 10:00a.m-3:00p.m EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky O. Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ky


RICKY Q. NGO
SUPERVISORY PATENT EXAMINER